

### **REMARKS**

The Office Action dated March 27, 2009 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 3, 8, 11, 12, 29, 31, and 34 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claims 5, 10, and 28 have been cancelled without prejudice and/or disclaimer. No new matter is believed to have been added. Claims 1-4, 6-9, 11-27, and 29-36 are pending, of which claims 1, 2, 6, 7, 9, and 14-27 remain withdrawn. Accordingly, claims 3, 4, 8, 11-13, and 29-36 are respectfully submitted for consideration.

Reconsideration and withdrawal of the objections and rejections is respectfully requested in light of the following remarks.

### **Incomplete Office Action**

Applicants note that the subject matter of claim 36 was not addressed in the Office Action. Under MPEP § 707.07, the examiner's action must be complete as to all matters. Because the Office Action failed to address the subject matter of claim 36, the Office Action is not considered to be complete. Accordingly, withdrawal of the instant Office Action is respectfully requested.

Applicants also note that the Office Action continues to maintain that the subject matter of claim 33 is not supported by the specification. However, the Office Action fails to establish a prima facie case providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. MPEP § 2163(III)(A). A general allegation (i.e. “the specification does not appear to support”) will not be a sufficient reason to support a rejection for lack of adequate written description.

Furthermore, MPEP § 2163(III)(B) requires that, before repeating any rejection for lack of written description, the Office must review the basis for the rejection in view of the record as a whole, including amendments, arguments, and any evidence submitted by applicant. MPEP § 2163(III)(B) also requires that when repeating the rejection, the Office Action must fully respond to Applicants’ rebuttal arguments, and properly treat any further showings submitted by applicant in the reply.

In this case, Applicants’ rebuttal arguments were not fully responded to by the Office Action. Instead, the Office Action simply provided a general allegation. Since the general allegation is not considered to be proper, the instant Office Action is not complete as to all matters. (MPEP § 707.07, citing 37 C.F.R. § 1.104(b)). Accordingly, the next Action cannot be made final.

### **Objection to the Claims**

Claims 34 and 35 were objected to as being dependent upon a rejected base claims, but would be allowable if rewritten in independent form to include all of the limitations of the base claim, and any intervening claims. However, Applicants respectfully submit that the subject matter of claims 34 and 35 should be allowable for at least the same reasons as base claim 10, from which they depend, and for the specific limitations recited therein. Therefore, these claims do not need to be rewritten in independent form, as suggested by the Office Action.

### **Rejection under 35 U.S.C. § 112**

Claim 31 was rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Office Action took the position that the specification does not provide support for the limitation “during the placing of the original sample in a processing furnace, additional external reshaping stresses are applied...” of claim 33. However, this rejection is traversed for at least the following reasons.

Applicants respectfully submit that the specification provides clear support to would convey to a person of ordinary skill in the art that the inventor had possession of subject matter recited in claim 33 at the time the invention was conceived. The specification describes the subject matter of claim 33 in sufficient detail that one skilled

in the art can reasonably conclude that the inventor had possession of the claimed invention. In particular, possession of claim 33 is shown by describing the subject matter of claim 33 using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention.

For example, the specification, on paragraph [0016], describes that the original sample is placed in a processing furnace under a performing stress state. Paragraph [0053] of the specification further describes that:

[a] vane-shaped graphite mandrel was placed inside a 50-mm diameter tubular-shaped 2D-braided SYLRAMIC fiber architecture (Fig. 7(a)), which was then subjected to the high temperature nitrogen conditions that convert the fibers to SYLRAMIC-iBN. The net result was not only complete fiber conversion to SYLRAMIC-iBN, but as shown in Fig. 7(b), the tubular architectural preform was permanently formed into a vane shape after mandrel removal. Thus for complex architectural preforms, this invention can be used to simultaneously improve SYLRAMIC SiC fibers and creep-form the preforms into component shapes with no residual elastic stresses remaining in the architectures.

In other words, one embodiment of the specification provides that a preform can be first formed on a round aluminum mandrel, which is then removed. The preform can be re-shaped at an ambient temperature by inserting a vane-shaped graphite mandrel. The final shape can be obtained by application of external mechanical stress provided by two graphite models. This allows the entire mold assembly to be thermally treated in a selected environment. After treatment, the inner mandrel and outside molds are removed. This procedure beneficially alters the composition of the fiber surface, improves the fiber creep rupture resistance, and permanently re-shapes the preform in a vane or airfoil shape

by relieving stresses in the preform caused by the initial reshaping procedure at the ambient temperature.

Therefore, a person of ordinary skill in the art, when construing the specification, would clearly understand that applicant had possession of the subject matter in question at the time the invention was conceived.

Applicants also submit that the specification does not need to provide explicit support for the subject matter in question, but instead the specification must simply provide either express, implicit, or inherent support (emphasis added). (MPEP § 2163(I)(B)). Since some of the embodiments described in the specification provide implicit or inherent support, Applicants respectfully submit that claim 33 satisfies the requirements under the first paragraph of 35 U.S.C. § 112.

If a subsequent Action is issued and the subsequent Action maintains this rejection, the Office is respectfully requested to provide reasons why a person skilled in the art, at the time the application was filed, would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. Without providing such reasons, the subsequent Action will also be deemed to be incomplete under MPEP § 707.07(f).

Otherwise, withdrawal of the rejection is respectfully requested for at least the reasons presented above.

### **Rejection under 35 U.S.C. § 103**

Claims 3-5, 8, 10-13, and 28-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over DiCarlo et al. ("SiC/SiC Composites with Improved BN Coating on Fibers") in view of Sacks (U.S. Patent No. 6,040,008). Particularly, the Office Action asserted that the combination of DiCarlo et al. and Sacks disclosed all of the elements of claims 3-5, 8, 10-13, and 28-32. However, this assertion by the Office Action is respectfully traversed as followed.

Claim 3, upon which claims 4, 8, 11-13, and 29-36 are dependent, recites a method for producing high-strength ceramic fibers and ceramic fiber architectural preforms with an in-situ grown coating on each fiber surface with a composition different than that of a bulk fiber. The method includes preparing an original sample composed of an architectural preform formed from an as-produced high strength ceramic fiber type. The architectural preform comprises at least one of a finite section of a continuous-length multi-fiber tow, a two-dimensional textile-formed fabric, and a three-dimensional textile-formed complex-shaped preform. The method includes placing the original sample in a processing furnace. The method includes thermally treating the original sample in the processing furnace at a processing temperature and a hold time of five hours or less in a processing gas having a composition, a pressure that is greater than 1 and less than or equal to 40 atmospheres, and a flow rate. The fiber composition, the processing temperature, the hold time, the gas composition, the pressure, and the flow rate are

preselected to allow atomic decomposition from the surface of each fiber with reduced loss in an average tensile strength of the fibers within the thermally treated sample.

As will be discussed below, Applicants respectfully submit that the combination of DiCarlo et al. and Sacks fails to disclose, either expressly or implicitly, all of the elements of claims 3-5, 8, 10-13, and 28-32.

DiCarlo et al. describes a method of fabricating composites of pretreated silicon carbide fibers in silicon carbide matrices to provide for the formation of improved boron nitride fiber/matrix interfacial layers. (DiCarlo et al., 1st paragraph).

Sacks describes a creep-resistant, high-strength silicon carbide fibers. In particular, Sacks describes a high strength, high creep resistant, boron-doped, silicon fiber, having no boron coating, originally formed by sintering, is produced by exposing the fiber to a nitrogen atmosphere and exposing the fiber to a carbon monoxide-containing atmosphere. (Sacks, column 7, lines 59-66).

The Office Action took the position that, while DiCarlo et al. does not disclose “a pressure between 1 and 40 atmospheres” (claim 3, line 12), Sacks allegedly discloses this feature. However, this position is clearly incorrect.

In the Response dated August 18, 2008, Applicants submitted arguments that “the pressure discussed in Sacks is one atmosphere or less, and sometimes completely pressure less (see column 2, lines 47-50, and column 4, lines 19 and 20).” The pending Office Action also acknowledged that the pressure in Sacks is 1 atm or less. (Office

Action, page 4, lines 13-14). However, it is the Office Action's position that because the pressure in Sacks could be 1 atm, Sacks discloses a pressure within the range disclosed in claim 3.

However, claim 3 recites, in part, "a pressure that is greater than 1 and less than or equal to 40 atmospheres" (emphasis added). Sacks is prevented from disclosing, either expressly or implicitly, at least the above-quoted feature of claim 3 because Sacks, as conceded by the pending Office Action, describes a pressure of 1 atm or less.

Since Sacks does not disclose the above-quoted pressure of claim 3, Sacks cannot cure the deficiencies of DiCarlo et al. Therefore, the entire combination of DiCarlo et al. and Sacks is deficient, as neither reference discloses "a pressure that is greater than 1 and less than or equal to 40", as recited in claim 3.

Accordingly, Applicants respectfully request the rejection of claim 3 be withdrawn and this claim be allowed for at least the reasons presented above.

Since dependent claims 12 and 31 recite a similar range as recited in claim 3, Applicants respectfully request that the rejection of claims 12 and 31 be withdrawn.

Regarding dependent claims 4, 8, 11, 13, 29, 30, and 31, Applicants submit that these claims inherit the patentable features of independent claim 3, by virtue of their dependency. Accordingly, withdrawal of the rejection of claims 4, 8, 11, 13, 29, 30, and 31 is respectfully requested for at least this reason, and for the specific limitations recited therein.



### **Conclusion**

For at least the reasons discussed above, Applicants respectfully submit that none of the cited references, whether considered alone or in combination, disclose, either expressly, implicitly or inherently, all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 3, 4, 8, 11-13, and 29-36 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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